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- (71) Applicant (for all designated States except US): DE-  
GUSSA AG [DE/DE]; Bennigsenplatz 1, 40474 Düssel-  
dorf (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): SCHULZE, Re-  
nate [DE/DE]; Bachgasse 49, 64625 Bensheim (DE).

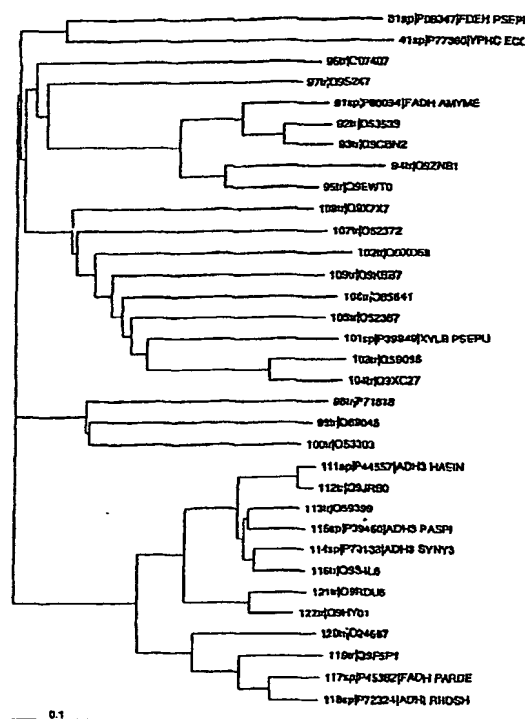
LORENZ, Patrick [DE/DE]; Nibelungenstrasse 91,  
64653 Lorsch (DE). ECK, Jürgen [DE/DE]; Jakobs-  
weg 48, 64625 Bensheim (DE). MAY, Oliver [DE/DE]; Am  
Reborn 17A, 60388 Frankfurt (DE). GRÖGER, Har-  
ald [DE/DE]; Akademiestrasse 31, 63450 Hanau (DE).  
TRAUTHWEIN, Harald [DE/DE]; Leonrodstrasse 78,  
80636 München (DE).

(74) Common Representative: DEGUSSA AG; Intellectual  
Property Management, Patente und Marken, Standort  
Hanau, Postfach 13 45, 63403 Hanau (DE).

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[Continued on next page]

(54) Title: NOVEL ALCOHOL DEHYDROGENASES



Overview of cluster 2 (= primer group 2), based on 33  
sequences

(57) Abstract: The invention relates to  
novel polypeptides which have the biological  
activity of an NAD- or NADP-dependent  
alcohol dehydrogenase. The invention  
furthermore relates to nucleic acids encoding  
said polypeptides, to non-human hosts or host  
cells and to reaction systems which may be used  
for preparing desired products. The polypeptides  
of the invention are preferably used in the  
preparation, starting from aldehydes or ketones,  
of primary and enantiomerically pure secondary  
alcohol's which may serve as intermediates for  
medicaments. Alternatively, the polypeptides  
of the invention may also be employed in the  
reverse reaction, i.e. the oxidation of alcohol's  
with the formation of aldehydes or ketones.

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**Declaration under Rule 4.17:**

— of inventorship (rule 4.17(iv)) for US only

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2005/002557

A. CLASSIFICATION OF SUBJECT MATTER  
C12N9/04 C12N15/31

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/091423 A (DEGUSSA AG; HUMMEL, WERNER; ABOKITSE; KOFI; GROEGER, HARALD) 6 November 2003 (2003-11-06) see the whole document	1-24
X	EP 1 382 683 A (SUMITOMO CHEMICAL COMPANY, LIMITED) 21 January 2004 (2004-01-21) see the whole document and especially SEQ ID NO: 1	1-24
X	EP 1 213 354 A (SUMITOMO CHEMICAL COMPANY, LIMITED) 12 June 2002 (2002-06-12) see the whole document and especially SEQ ID NO: 34	1-24

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

28 November 2005

Date of mailing of the international search report

06/12/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Grosskopf, R

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2005/002557

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WANG J-C ET AL: "Cloning, sequence analysis, and expression in Escherichia coli of the gene encoding phenylacetaldehyde reductase from styrene-assimilating Corynebacterium sp. strain ST-10"</p> <p>APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, SPRINGER VERLAG, BERLIN, DE, vol. 52, no. 3, 1999, pages 386-392, XP002221908</p> <p>ISSN: 0175-7598</p> <p>see the whole document</p> <p>&amp; DATABASE UniProt 'Online! 1 May 1999 (1999-05-01), "Phenylacetaldehyde reductase." retrieved from EBI accession no. UNIPROT:Q9ZN85</p> <p>Database accession no. Q9ZN85</p>	1-4

# INTERNATIONAL SEARCH REPORT

International application No.  
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## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: 25-28  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 25-28

Claim 1 of the application as filed was illegible. Therefore, in principle, a search for claims 1 and 2 to 24 (which all referred to Claim 1) was not possible.

Thus, on the basis of the description, a search was carried out for the subject-matter which, under the most reasonable considerations, should have formed part of claim 1.

However, even on the basis of the description it was not clear which sequence or sequences should have been included in Claim 1.

Since all of the sequences seemed to be equivalent, in accordance with considerations which apply for lack of unity, the search was carried out with respect to the sequence(s) which appear as the first ones in the description (i.e. with regard to SEQ ID NOs: 1 to 5 which apparently have a high degree of homology). In fact, under the assumption that all sequences included in the sequence listing should have formed part of Claim 1, objections for lack of unity would have to be raised.

In view of the problems above, this could however not be done, since in the absence of knowing the exact contents of the claim, the possible number of alleged inventions could not be determined.

In addition, due to said problems it was neither possible to raise a non-unity objection with regard to the various primers of Claim 27. However, and in view of the documents which were found already with regard to the first invention, these primers do not belong to said first invention and consequently have not been searched.

Finally, these primers do not even form part of the sequence listing. Regardless the basic problems mentioned, a search for Claims 25 to 26 was not possible at all, since the ligands claimed are not characterised by (true) technical features.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2005/002557

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03091423	A	06-11-2003	AU 2003221539 A1 DE 10218689 A1 EP 1499716 A1 JP 2005523702 T	10-11-2003 20-11-2003 26-01-2005 11-08-2005
EP 1382683	A	21-01-2004	NONE	
EP 1213354	A	12-06-2002	US 2003134402 A1	17-07-2003